No. 642,296. Patented Jan. 30, 1900.

C. C. CARTER.

WIRE STAY BENDING MACHINE.

(Application filed Mar. 25, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

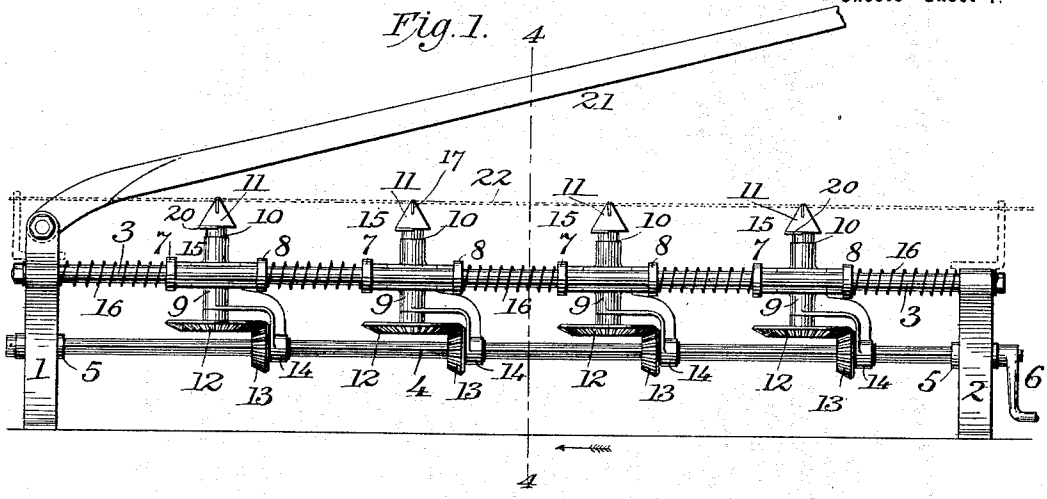


Fig. 2.

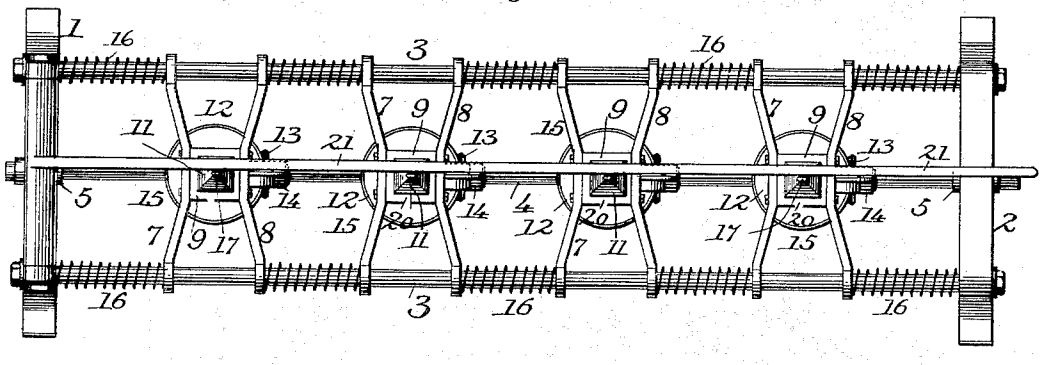


Fig. 3.

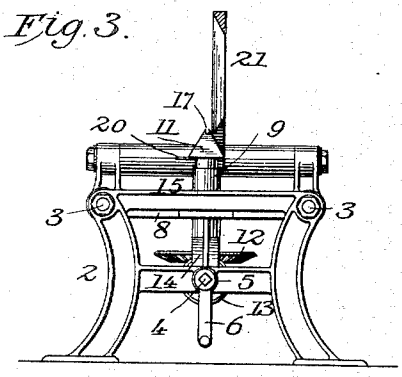
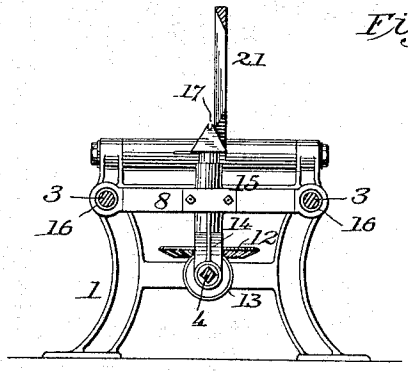


Fig. 4.



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No. 642,296. Patented Jan. 30, 1900.

C. C. CARTER.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 8.

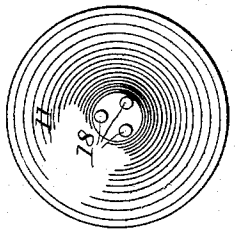


Fig. 10.

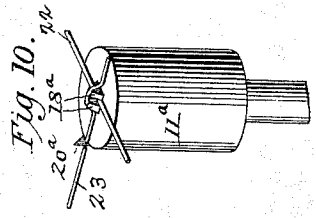


Fig. 7.

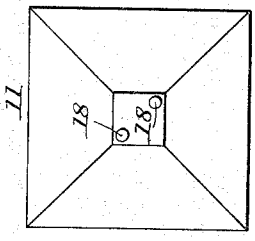


Fig. 6.

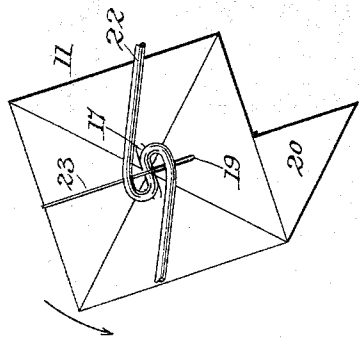


Fig. 9.

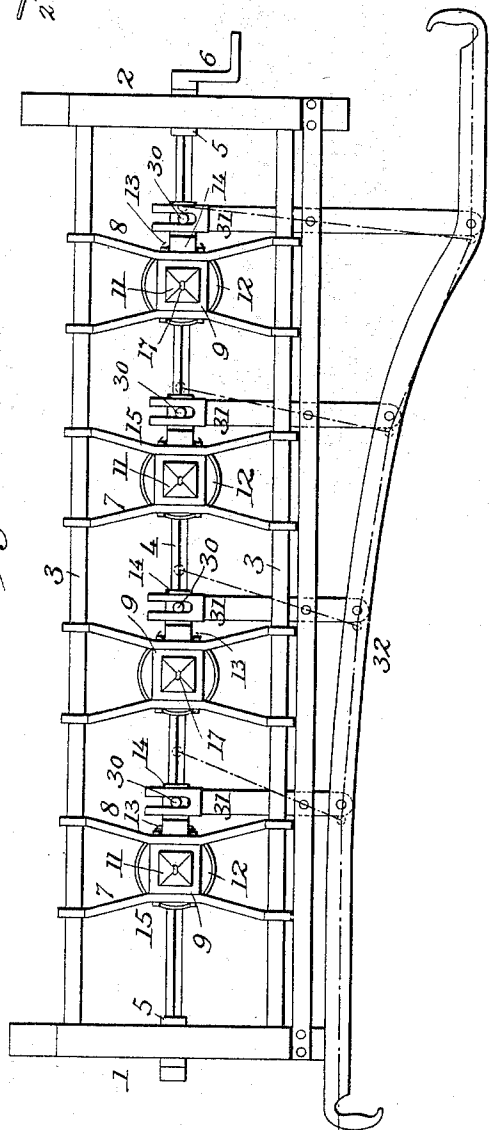
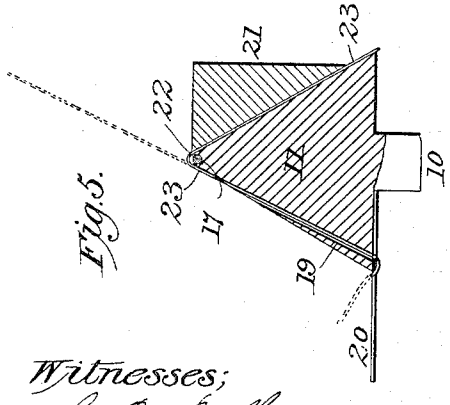


Fig. 5.



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UNITED STATES PATENT OFFICE.

CURTIS CORSAIR CARTER, OF BLUFFS, ILLINOIS.

WIRE-STAY-BENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 642,296, dated January 30, 1900.

Application filed March 25, 1899. Serial No. 710,441. (No model.)

To all whom it may concern:

Be it known that I, CURTIS CORSAIR CARTER, of Bluffs, in the county of Scott and State of Illinois, have invented certain new and useful Improvements in Machines for Bending Wire, of which the following is a specification, reference being had to the accompanying drawings and to the numerals of reference marked thereon.

This invention has reference to a machine for forming loops in wire-fence stays and securing the attaching-wires therein.

The object of the invention is to form simultaneously the several loops or bends in such vertical wire stays or pickets as are described in Patent No. 588,896, granted August 24, 1897, to Cyrus C. Carter. At the same time that the loops are formed fastening-wires for securing the stays to the strand-wires are placed within the loops, which are or may be equal in number to the number of strand-wires.

Referring to the drawings, Figure 1 is a side elevation of my device in its preferred form. Fig. 2 is a plan view, and Fig. 3 is an end elevation thereof. Fig. 4 is a cross-section on the line 4 4 of Fig. 1. Fig. 5 is a view of the twister-head in section. Fig. 6 is a plan view of the twister-head, illustrative of the mode of making the loop. Figs. 7 and 8 are plan views of modifications of the twister-head. Fig. 9 is a plan view of a modified form of my machine. Fig. 10 illustrates a further modification of the twister-head.

Similar numerals of reference indicate similar parts in the several figures.

End frames 1 2, attached to any suitable base, are connected at the top by longitudinal tie-rods 3, parallel to each other and preferably lying in the same plane. In a lower plane, but in the median line between them, is a longitudinal shaft 4, square in cross-section, as shown, and journaled in bearings 5 in the end frames 1 2. A crank 6, fitted on the shaft at one end, serves to turn it when desired.

Slidably mounted on the tie-rods 3 are a series of twister-carriers 15, each carrier being formed of a pair of rods 7 8, bolted to a shaft-bearing 9, as shown, each bearing 9 carrying a short shaft 10. A twister-head or loop-former 11 is fixed to the upper end of each shaft, while on each lower end is keyed a bevel-wheel 12. A bevel-pinion 13 engages with each bevel-gear 12, each pinion 13 rotating in a bracket 14, depending from the bearing 9. The square shaft 4 passes through the hubs of all the pinions 13, the arrangement of the parts being such that on rotating the shaft by hand or other power the twister-heads or loop-formers will through the gearing be turned sufficiently to form loops in a wire placed on the twister-heads, as hereinafter described.

Spiral springs 16 surround the tie-rods 3, two being between each adjacent pair of twister-carriers 15 and between each end twister-carrier and the frame.

The twister-head or loop-former 11, which is shown enlarged in Figs. 5 and 6, has a body of pyramidal or conical form adapted to be secured to the upper end of a shaft 10. The apex, which supports the stay-wire, may be variously formed—as, for instance, a notch 17 (shown in Figs. 1 to 6) may be made therein, or the apex may be flattened and provided with two, three, or more pins 18, projecting upwardly therefrom. A hole 19 is made through the body of the twister-head from the base to the apex, through which is passed the fastening-wire to be attached to the loop in the stay-wire during its formation. A knife 20, secured to the base of the twister-head, cuts the fastening-wire to the proper length at the beginning of rotation of the twister-head.

A lever 21 is pivoted to the end frame 1 and extends longitudinally of the machine above the twister-heads, one of the sides of the lever being beveled at an angle similar to that of the side of the twister-head. The lever 21 is held above the twister-head by means of a spring or counterweight. (Not shown.)

The operation of the machine is as follows: A wire 22 of suitable length for a stay or a length of wire from a reel is placed in the notches 17 or between the pins 18 of the twister-heads. Through the holes 19 in the several twister-heads wires 23 are passed upwardly from the bottom a distance substantially equal to the length of the twister-heads, the wires standing in the position shown in dotted lines in Fig. 5. The lever 21 is now brought down, bending each of the wires 23

into the form of a staple, and immediately raised, after which the shaft 4 will be given a rotation, which will cause the twister-heads to turn in the direction indicated by the arrow in Fig. 6 far enough to complete the loops. At the beginning of rotation the knives 20 sever the fastening-wires 23 from the portions leading from the reels. As the twister-heads take up wire to form the several loops in the fence-stays the spiral springs 16 yield and permit the twister-carriers 15 to adjust themselves to the varying conditions. As soon as the completed stay is removed from the twisters the carriers 15 are returned to normal position by the springs 16.

In the modified form of device shown in Fig. 9 I dispense with the springs 16, and in place thereof provide each bracket-bearing 14 with pins 30, a forked lever 31 engaging the pins of each bearing. Each lever 31 is pivoted to the frame of the machine, the outer ends of the levers being of different lengths and pivoted to a bar 32, by which the twister-carriers 15 are returned to normal position after forming the loops.

The modified form of twister-head illustrated in Fig. 10 consists of a cylindrical body 11^a, attached to a shaft 10, the two having a common axis of rotation. Projecting from the face of the twister-head are two studs or pins 18^a, providing a guide for the stay-wire 22 and also a support for the wire 23, which latter wire crosses the twister-head at a right angle to the wire 22. The staple-wire 23 is passed over the support formed by the studs 18^a and bent into the shape indicated by a lever similar to lever 21, but so arranged as to bend the staple-wire downwardly on both sides of the studs by the same operation. After shaping the staple-wire the twister-head is revolved, bending the stay-wire in the same manner as in the other forms of twister-head. A knife 20^a, fixed to the periphery of the twister-head in the position shown, severs the staple-wire at the beginning of rotation of the twister.

The use of my invention greatly facilitates and cheapens the manufacture of such a wire fence as is described in the said Letters Patent; and the work done is stronger, neater, and more uniform in its character than similar work done by hand.

Having thus described my invention, what I claim is—

1. In a machine for bending wire, the combination of a frame, a series of twister-carriers slidably mounted thereon, twister-heads journaled in the carriers, and means for rotating the twister-heads, substantially as set forth.

2. In a machine for bending wire, the combination of a frame, a series of twister-heads mounted therein and adapted to move toward and from each other, and means for rotating the twister-heads, substantially as set forth.

3. In a machine for bending wire, the combination of a frame, a series of twister-heads mounted therein and adapted to move toward each other while in operation, and means for moving them away from each other when the product is removed from the machine, substantially as set forth.

4. In a machine for bending wire, the combination of a frame, twister-heads mounted therein and adapted to move toward and from each other, and a lever adapted to coact with the twister-heads, substantially as set forth.

5. In a machine for bending wire, the combination of a frame, a series of twister-carriers slidably mounted thereon, twister-heads journaled in the carriers, spiral springs separating the twister-carriers from each other and from the end plates of the frame, and means for rotating the twister-heads, substantially as set forth.

6. In a machine for bending wire, the combination of a frame, a series of twister-carriers slidably mounted thereon, a twister-head fixed to a shaft journaled in each of the carriers, a bevel-gear on each shaft, a bevel-pinion in engagement with each bevel-gear, and a shaft common to all the pinions, substantially as set forth.

7. In a machine for bending wire, the combination of a frame, a series of twister-carriers slidably mounted thereon, a twister-head fixed to a shaft journaled in each of the carriers, a lever pivoted to the frame and adapted to coact simultaneously with the series of twister-heads, a bevel-gear on each of said shafts, a bevel-pinion in engagement with each bevel-gear, and a shaft common to all the pinions, substantially as set forth.

8. In a machine for bending wire, the combination of a frame, a series of twister-carriers slidably mounted thereon, spiral springs between adjacent carriers, and the end carriers and the frame, a twister-head fixed to a shaft journaled in each of the carriers, a lever pivoted to the frame and adapted to coact simultaneously with the series of twister-heads, a bevel-gear on each of said shafts, a bevel-pinion in engagement with each bevel-gear, and a shaft common to all the pinions, substantially as set forth.

9. A twister-head of pyramidal or conical form, having projections at its apex between which the material to be bent is placed, and an opening or hole extending from its base upwardly to or near the apex, substantially as set forth.

10. A twister-head of pyramidal or conical form, having projections at its apex between which the material to be bent is placed, an opening or hole extending from its base upwardly to or near its apex, and a knife secured to the base and extending outwardly, substantially as set forth.

11. A twister-head for wire-bending machines, having a guide for the wire to be bent, combined with means for carrying a wire crossing the twister-head and the first-named wire, substantially as set forth.

12. A twister-head for wire-bending ma-

chines, having projections at its top between which the wire to be bent is placed, combined with means for carrying a wire crossing the twister-head and the first-named wire, substantially as set forth.

13. A twister-head for a wire-bending machine, having a guide for the wire to be bent, means for supporting a wire crossing the twister-head and the first-named wire, and a knife on the twister-head for severing one of the wires, substantially as set forth.

14. A twister-head for a wire-bending machine, having projections at its top between which the material to be bent is placed, means for supporting a wire crossing the twister-head and the first-named wire, and a knife carried by the twister-head for severing one of the wires, substantially as set forth.

15. In a machine for bending wire, the combination of a series of twister-carriers, twister-heads journaled in the carriers, springs separating the twister-carriers from each other, and means for rotating the twister-heads, substantially as set forth.

16. In a machine for bending wire, the combination of a frame, a series of twister-heads movable thereon during rotation, and means for rotating the twister-heads, substantially as described.

17. In a machine for bending wire, the combination of a frame, a series of twister-heads relatively movable thereon during rotation, and means for rotating the twister-heads, substantially as described.

18. In a machine for bending wire, the combination of a frame, a series of twister-carriers thereon, twister-heads journaled in the carriers, and means for rotating the twister-heads, the said carriers being capable of relative movement during the rotation of the twister-heads, substantially as described.

19. In a machine for bending wire, the combination of a frame, twister-heads movable thereon independently of each other during rotation, and means for rotating the twister-heads, substantially as described.

20. In a machine for bending wire, the combination of a frame, twister-carriers thereon, twister-heads mounted in the carriers, and means for rotating the twister-heads, each of the said carriers being capable of independent movement during the rotation of the twister-heads, substantially as described.

21. In a machine for bending wire, the combination of a frame, a series of automatically-movable rotatable twister-heads thereon, and means for rotating the twister-heads, substantially as set forth.

22. In a machine for bending wire, the combination of a frame, a series of twister-carriers capable of automatic relative movement thereon, twister-heads journaled in the carriers, and means for rotating the twister-heads, substantially as set forth.

23. In a machine for bending wire, the combination of a frame, a series of twister-heads capable of automatic relative movement thereon, and means for rotating the twister-heads, substantially as set forth.

24. In a machine for bending wire, the combination of a frame, twister-heads capable of automatic movement thereon independently of each other, and means for rotating the twister-heads, substantially as set forth.

25. In a machine for bending wire, the combination of a frame, twister-carriers capable of automatic movement thereon independently of each other, twister-heads mounted in the carriers, and means for rotating the twister-heads, substantially as set forth.

In testimony whereof I hereunto set my hand and seal.

CURTIS CORSAIR CARTER.

Witnesses:
A. W. BAIRD,
HARRY B. MYERS.